

NYISO Outlook: Winter 2018-2019

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FERC Winter 2018-2019 Operations and Market Performance

Technical Conference



Agenda

- Winter 2018-19 Preparedness
- Winter 2018-19 Capacity Assessment
 - New York Generating Capacity Fuel Mix
- Gas-Electric Coordination
- Situational Awareness
- Winter 2017-18 Conditions
 - Historic Winter Peaks
 - Historic Fuel and Energy Prices
- Recent Market Enhancements
- Resilience Initiatives
- Continued Challenges

Winter 2018-19 Preparedness

- Seasonal generator fuel surveys indicate oil-burning units have sufficient start-of-winter oil inventories along with arrangements for replacement fuel
- The NYISO has performed on-site visits of generating stations to discuss past winter operations and preparations for upcoming winter, including:
 - Generation testing
 - Cold-weather preventative maintenance
 - Fuel capabilities, and
 - Fuel switching capabilities
- Existing Minimum Oil Burn procedures defined by the New York State Reliability Council (NYSRC) establish fuel switching requirements at certain cold weather thresholds to secure electric reliability for NYC LDC gas pipeline contingencies
- NYISO coordination of all requests for transmission and generator outages to alleviate potential impact on power system reliability

2018-2019 Winter Capacity Assessment

NYISO Base-case Analysis

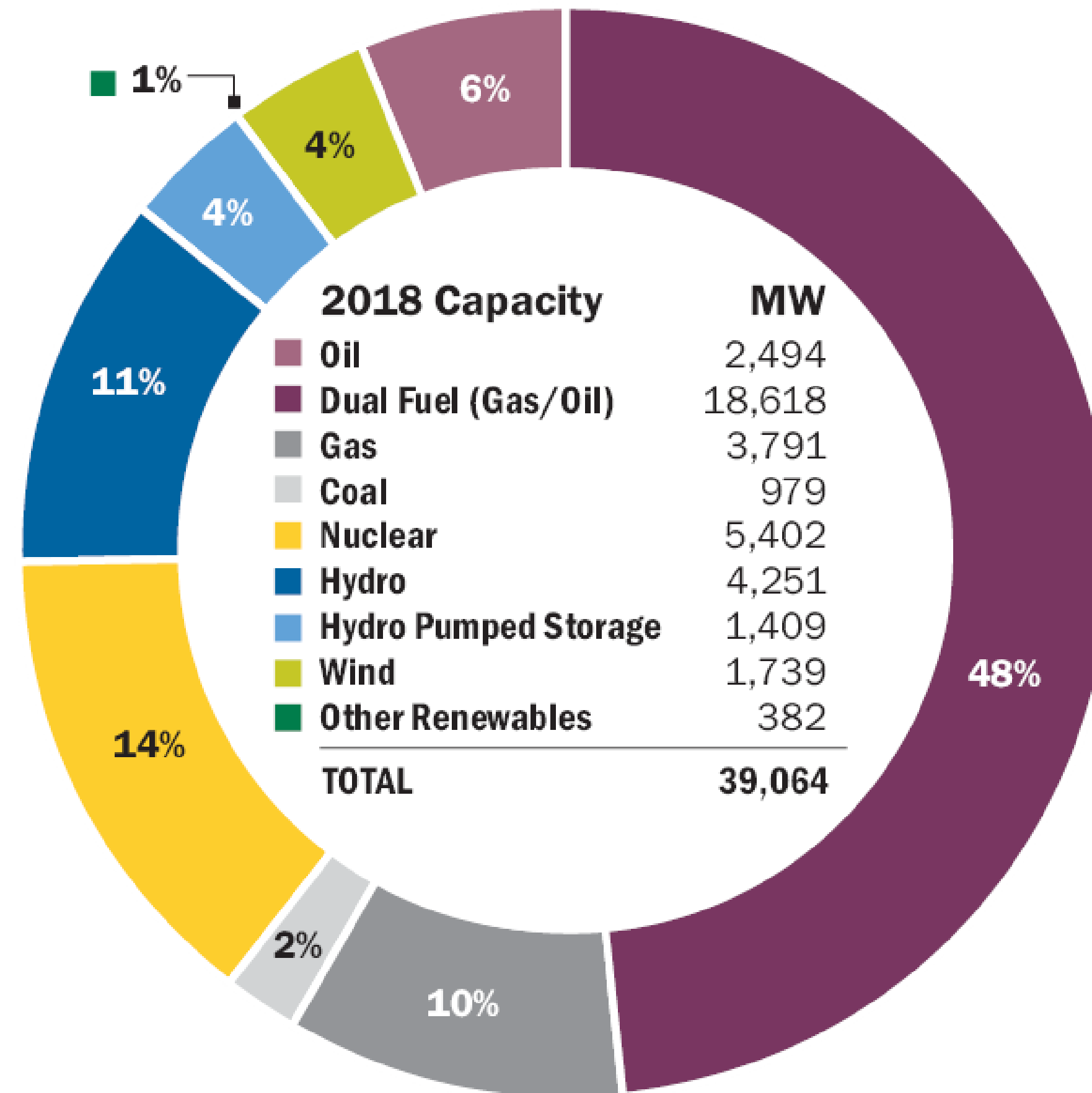
- 11,436 MW Projected capacity margin for 50-50 peak winter conditions
- 9,821 MW Projected capacity margin for 90-10 peak winter conditions

NYISO Natural Gas Supply Limitations Scenarios

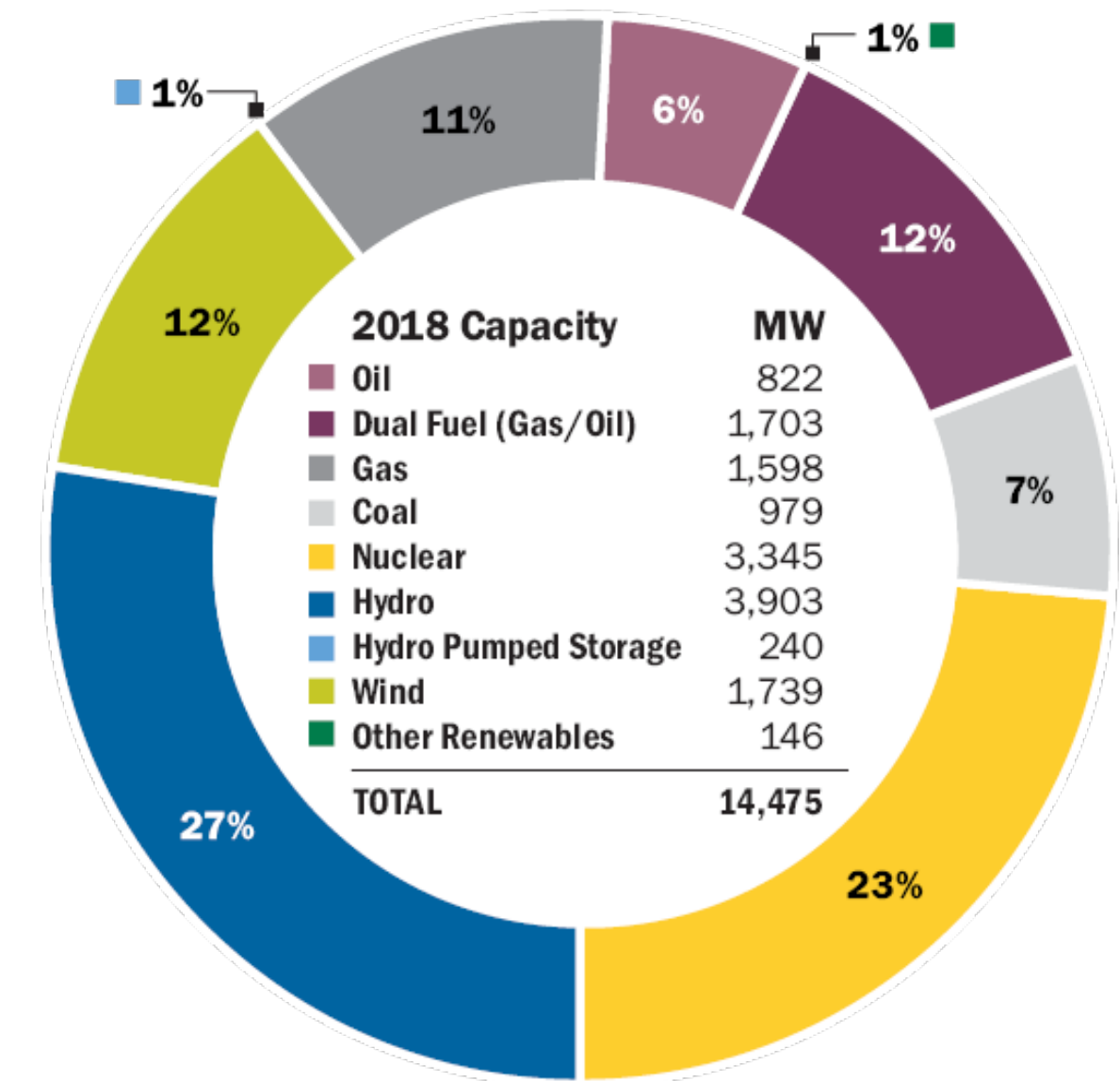
- 3,290 MW Projected capacity margin for 90-10 peak winter conditions and loss of all gas supplies
- 5,205 MW Projected capacity margin for 90-10 peak winter conditions and retain only units with firm gas supplies

Fuel Mix – Generating Capacity

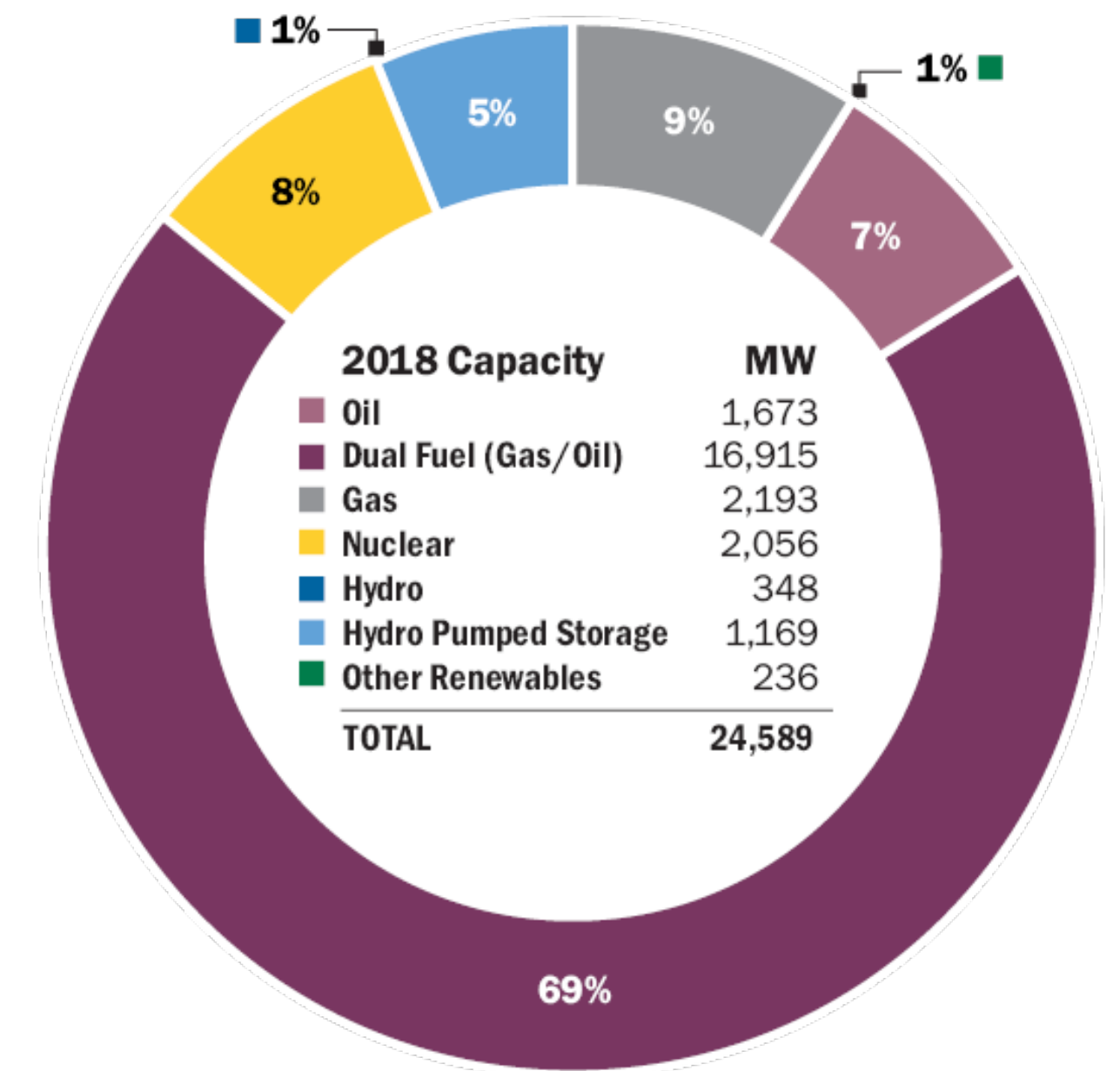
New York
Statewide
Generating
Capacity
by Fuel
Source:
2018



Upstate
(Zones A-E)
Generating
Capacity by
Fuel Source:
2018



Downstate
(Zones F-K)
Generating
Capacity by
Fuel Source:
2018



Gas-Electric Coordination

- A communications protocol is in place with NY state agencies to improve the speed and efficiency of generator requests to state agencies for emissions waivers if needed for reliability
 - Protocol was leveraged in January 2018 and proved effective in facilitating communications between parties
- An emergency communication protocol is in place to communicate electric reliability concerns to pipelines and gas LDCs during tight electric operating conditions
 - Cooperative process with interstate pipelines and LDCs for providing OFO information to the NYISO

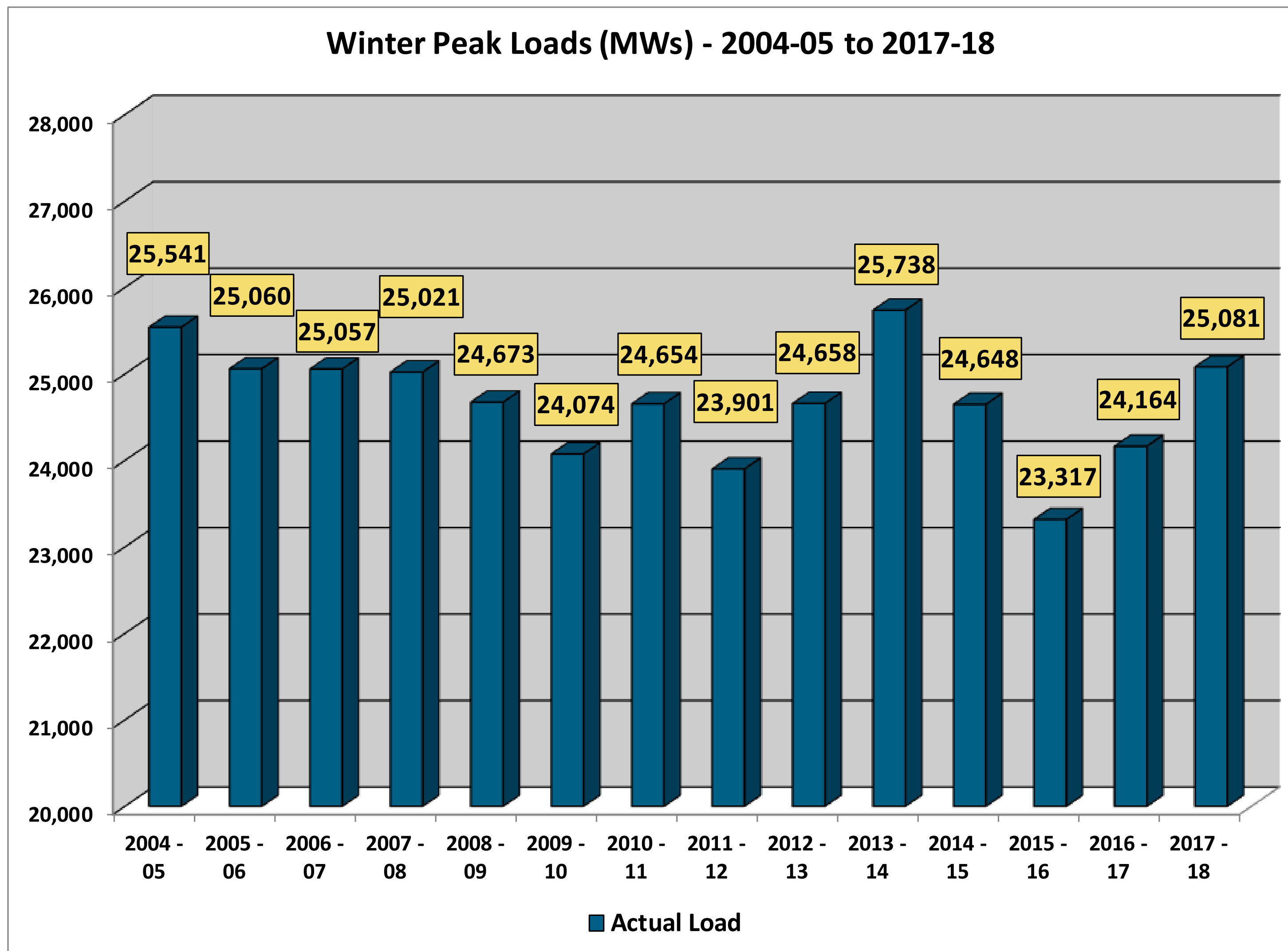
Situational Awareness

- Control Room gas-electric support
- Video Boards
 - Northeast interstate pipeline system is displayed
 - Operational Flow Orders are displayed with readily detectable visualization techniques
- A web-based, fuel survey “portal” provides generator fuel information to the operators
 - Updated weekly by generators
 - Updated daily during cold weather conditions

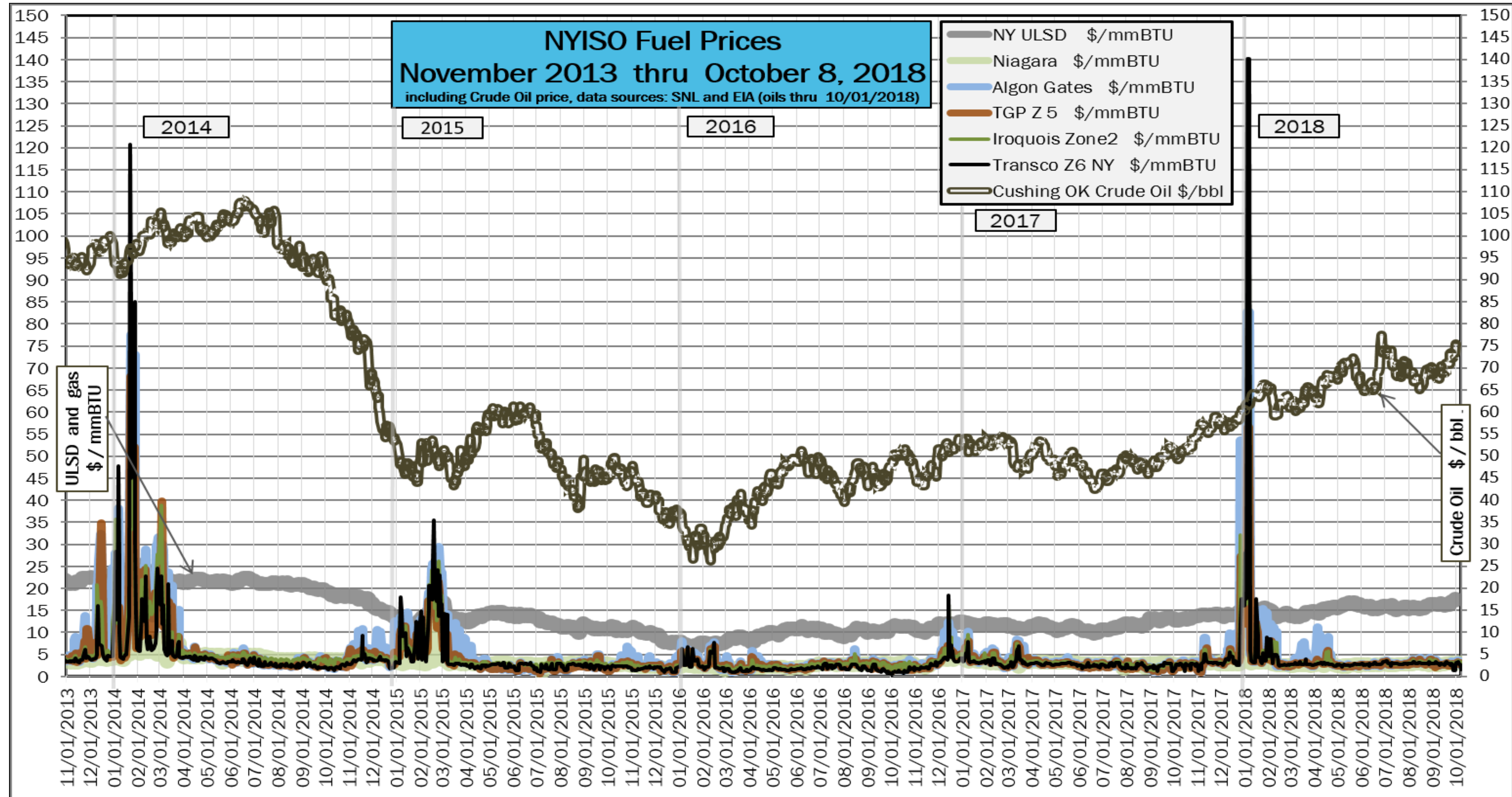
Last Winter: 2017-18 Cold Weather Conditions

- **Northeast Cold Snap:** December 26, 2017 through until January 7, 2018 (13 days)
- **Albany, NY:** Average temperature was 4.5° F between December 27 through January 2 with 7 consecutive days with minimums below 0° F
- **Syracuse, NY:** Coldest start of January in over 100 years with January 1-7 average of 7.3° F
- **New York City:** Temperatures below 32° F for 14 days
- **Coastal Blizzard:** Entire east coast experienced a Coastal Blizzard which impacted NYC, Long Island, and New England on January 4-6
 - NY: Mostly a snow, wind, and cold event

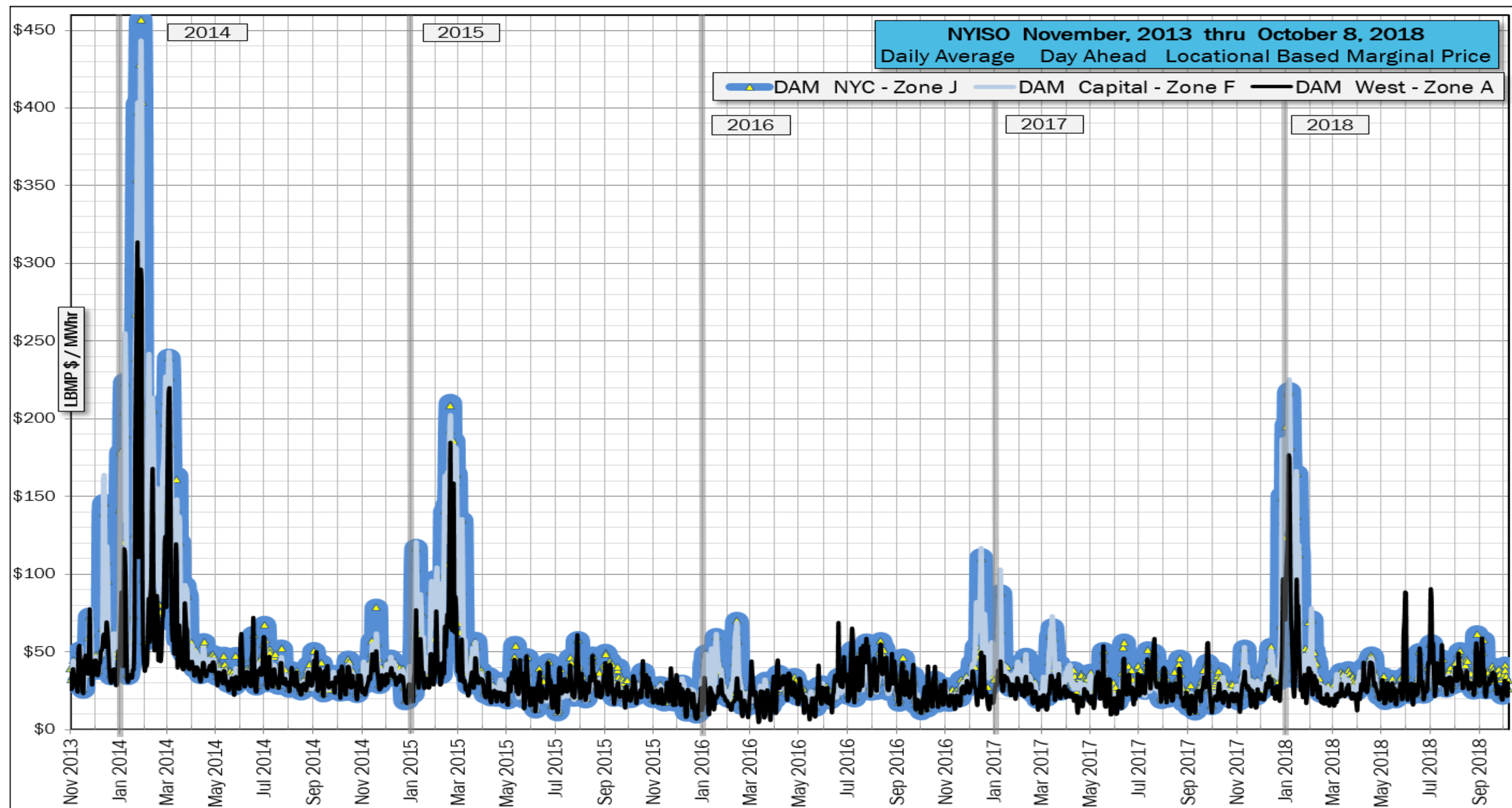
Historic Winter Peaks 2004-2018



Overview: Fuel Prices



Overview: Energy Prices



Market Enhancements

- **November 2014** Established capability to allow generators to provide expected costs for day-ahead reference level development
- **November 2015** Implemented enhancements to Shortage Pricing to incent generators to secure sufficient fuel to meet day-ahead schedules
- **November 2015** Increased the Total Operating Reserve Requirement from 1965 MW to 2620 MW and implemented a new 30-minute reserve requirement for Southeastern NY
- **FERC Order 809** NYISO market closes at 5 AM (EST/EDT) and posts day-ahead electric schedules around 9:30 AM
- **June 2016** Enhanced Scarcity Pricing during demand response activations deployed
- **September 2017** Tariff changes to reflect new NYSRC dual fuel testing rules applicable to combined cycle units in New York City



Going Forward: Resilience Efforts

- Although the NYISO does not currently face imminent resilience concerns that require immediate action, the ongoing transformation of the grid presents new and changing variables that must be managed in operating and planning the system
 - **Approach:** NYISO and its stakeholders are actively engaged in a multi-faceted, holistic effort to identify, review, and develop the necessary market, operational, and system planning enhancements to address the evolving nature of the bulk power system.
 - **Master Plan:** As part of this effort, a “master plan” was developed to provide a strategic vision for market design enhancements over the next five years. The NYISO expects to develop similar plans annually to provide a continually updated vision of the NYISO’s forward-looking market design strategy.
 - **Fuel Security Study:** In 2019, the NYISO will conduct a comprehensive, forward-looking fuel and energy security assessment to evaluate the ability to meet electric system needs during stressed system conditions, such as prolonged cold weather events and disruptions in fuel availability. If the study results reveal potential fuel and energy security risks or concerns, the assessment will help identify potential market enhancements that should be further pursued with stakeholders to achieve desired improvements in grid resilience.

Continued Winter Challenges

- **Gas Availability** | Gas LDC retail load has gas transportation priority over electric power generation
- **Extended Cold Weather Conditions** | Burn rates of alternative fuels can exceed replacement rates of alternative fuels during extended cold weather
- **Emissions challenges to dual fuel capability** | Burning oil may be further restricted by reduced emission limits
- **New gas pipeline siting remains challenging**
- **Fuel Security** | Assess necessity for further enhancements to market mechanisms and requirements to align with reliability needs

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system

